

5,721,439 ("Lin"); rejected claims 90, 117, and 118 under 35 U.S.C. § 103(a) as unpatentable over Hsu; and indicated that claims 83-88, 92, and 96-116 are allowed.

Applicants thank the Examiner for indicating allowable subject matter. By this Amendment, Applicants propose canceling claims 89-91, 97, 98, 117, and 118 without prejudice or disclaimer of the subject matter thereof. Upon entry of this Amendment, the rejections of claims 89-91, 117, and 118 will be rendered moot.

Furthermore, the Applicants propose amending claims 83, 88, 92, 96, 101, 103, and 121 to more appropriately define the invention. Applicants respectfully submit that claims 83-88, 92, and 96-116 remain allowable over the prior art of record, Lin and Hsu.

More particularly, in accordance with the proposed amendment, claim 83 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, "[a] plurality of current divider segments randomly distributed within the first diffusion region." Also in accordance with the proposed amendment, claim 92 is directed to an electrostatic protection device comprising a combination of elements including, *inter alia*, "a plurality of current divider segments formed within [a] first diffusion region and being randomly distributed therein."

Lin is directed to electrostatic discharge circuitry. Lin discloses that the discharge circuitry comprises a number of isolated islands 81-86 arranged in a diffusion region. See Lin, Fig. 8. Lin explicitly teaches that islands 81-86 are symmetrically arranged. Specifically, Lin teaches "islands [81-86] are aligned along the longitudinal direction of the islands themselves, and each isolated island in a row is in relative interleaving relationship with the proximate islands in the neighboring rows at both sides." Lin, col. 5, lines 52-56. Furthermore, Lin teaches that "all the islands 81-86 are

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

substantially the same size in terms of both width and length ... [which] allows for a symmetric alignment." Lin, col. 5, lines 61-64.

Similarly, Hsu is directed to an electrostatic discharge device. Hsu discloses that the discharge device comprises a plurality of floating polysilicon elements 140 positioned between a gate electrode 126 and drain contacts 130. See Hsu, col. 3, lines 15-56. Hsu discloses floating polysilicons 140 are staggered in a checkered pattern. See Hsu, col. 2, lines 21-41 and Figure 5.

Thus, claims 83 and 92 are allowable at least because Hsu and Lin fail to teach or suggest current divider segments randomly distributed in a first diffusion region.

Claim 101 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, "a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a first segment spaced apart by a first gap in a first direction from an adjacent second segment; said segments further include a third segment spaced apart by a second gap in the first direction from an adjacent fourth segment; and said first gap being larger than the second gap," (emphasis added). Claim 103 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, "a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region, wherein said segments include a first segment having a first center-of-area being spaced apart from an adjacent second segment having a second center-of-area; a third segment having a third center-of-area being spaced apart from an adjacent fourth segment having a fourth center-of-area; a first distance in a first direction between the first and second centers-of-area; a second

distance in the first direction between the third and fourth centers-of-area; and the first distance being larger than the second distance," (emphasis added).

As advanced above, Lin is directed to electrostatic discharge circuitry comprising a number of isolated islands 81-86. Lin explicitly teaches that islands 81-86 are symmetrically arranged. Specifically, Lin teaches "islands [81-86] are aligned along the longitudinal direction of the islands themselves, and each isolated island in a row is in relative interleaving relationship with the proximate islands in the neighboring rows at both sides." Lin, col. 5, lines 52-56.

Likewise, Hsu is directed to an electrostatic discharge device. Hsu discloses that the discharge device comprises a plurality of floating polysilicon elements 140 positioned between a gate electrode 126 and drain contacts 130. See Hsu, col. 3, lines 15-56. Hsu discloses floating polysilicons 140 are staggered in a checkered pattern. See Hsu, col. 2, lines 21-41 and Figure 5.

Thus, claims 101 and 103 are allowable at least because Lin and Hsu fail to teach or suggest current divider segments with different sized gaps between segments in a first direction.

Applicants also propose amending claim 96 to more appropriately define the invention and propose adding new claims 123 and 124 to protect additional aspect related to the present invention. Applicants submit that these claims are allowable over the prior art of record, Lin and Hsu.

Claim 96 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, "a plurality of current divider segments formed within and completely surrounded by [a] first diffusion region including first and

second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other," (emphasis added). Claim 123 is directed to an electrostatic discharge protection device comprising a combination of elements including, *inter alia*, "a first current divider segment formed within [a] first diffusion region having a first portion oriented at an angle not parallel to the channel region," (emphasis added).

As advanced above, Lin and Hsu are directed to electrostatic protection devices. Both Lin and Hsu teach islands formed in a diffusion region. However, Lin and Hsu teach that the islands are oriented parallel to the channel region and to each other. See Lin, Fig. 8 and Hsu, Fig. 5. Thus, claims 96 and 123 are allowable over Lin and Hsu. Claim 124 is allowable at least due to its dependence from allowable claim 123.

With regard to the objection to the drawings, Applicants propose amending Fig. 24 to more appropriately illustrate the subject matter of claims 121 and 122. Applicants submit that no new matter will be introduced by this amendment. For example, support for this amendment may be found at page 27 of the specification. The specification at page 27, lines 12-16 states:

The benefits of the pseduo-collector structure can be further enhanced by positioning the current divider segments such that the weight or area center of all segments in the drain region is closer to the gate or channel region than to the drain contacts. The current divider segments are so positioned in the devices illustrated in Figs. 2-12, 24, and 25.

Thus, entry of the proposed amendment to Fig. 24 will not introduce new matter.

Therefore, Applicants request that the Examiner approve the amendment to Fig. 24.

Furthermore, since the Examiner alleges that the subject matter recited in claim 121 is

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

not shown in the drawings, entry of the amendment to Fig. 24 will overcome the Examiner's objection to the drawings.

With regard to the rejection of claims 121 and 122 under 35 U.S.C. § 102(e), Applicants respectfully submit that Hsu fails to anticipate these claims.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102(e), each and every element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. § 2131 (8th Ed., Aug. 2001), quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Finally, "[t]he elements must be arranged as required by the claim." M.P.E.P. § 2131, p. 2100-69.

Claim 121 is directed to an electrostatic discharge device comprising a combination of elements including, *inter alia*, "a channel formed in a third region between ... first and second diffusion regions; and a plurality of current divider segments formed within the first diffusion region between said contact region and the channel and each of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region."

Hsu is directed to an electrostatic discharge device. Hsu discloses that the discharge device comprises a plurality of floating polysilicon elements 140 positioned between a gate electrode 126 and drain contacts 130. See Hsu, col. 3, lines 15-56. However, Hsu discloses that polysilicon elements 140 are arranged at different distances from gate electrode 126 with some of the polysilicon elements positioned closer to drain contacts 130. See Hsu, Fig. 5. Thus, Hsu fails to teach at least "a

plurality of current divider segments formed within the first diffusion region between said contact region and the channel and each of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region," as recited in claim 121. Hence, Hsu fails to anticipate claim 121. For at least this reason, claim 121 is allowable. Claim 122 is allowable at least due to its dependence from allowable claim 121.

With regard to the rejection under 35 U.S.C. § 103(a) over Lin, Applicants respectfully assert that the Examiner has failed to establish a *prima facie* case of obviousness.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." See M.P.E.P. § 2143.01 *quoting In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143, pp. 2100-122 to 127. In this case, a *prima facie* case of obviousness has not been established at least because Lin fails to teach or suggest all the claim elements.

Claim 121 is directed to an electrostatic discharge device comprising a combination of elements including, *inter alia*, "a channel formed in a third region between ... first and second diffusion regions; and a plurality of current divider

segments formed within the first diffusion region between said contact region and the channel and each of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region.”

Lin is directed to electrostatic discharge protection circuitry. Lin discloses that the circuitry comprises islands 93 positioned between a gate strip 90 and contacts 96. See Lin, Fig. 9. However, Lin teaches that islands 90 are arranged at different distances from gate strip 90 with some of islands 90 positioned closer to contacts 96. See Lin, Fig. 9. Thus, Lin fails to teach or suggest at least “a plurality of current divider segments formed within the first diffusion region between said contact region and the channel and each of the current divider segments formed within the first diffusion region being closer to the channel than to the contact region,” as recited in claim 121. Hence, a *prima facie* case of obviousness has not been established for claim 121. For at least this reason, claim 121 is allowable. Claim 122 is allowable at least due to its dependence from allowable claim 121.

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 83-88, 92, 96, 99-116, and 121-124 in condition for allowance. Applicants submit that the proposed amendments of claims 83, 88, 92, 96, 101, 103, and 121 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicants respectfully point out that the final action by the Examiner presented some new arguments as to the application of the art against

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Applicant's invention. M.P.E.P. § 706.07(a) sets forth "...second or any subsequent actions on the merits shall be final, **except where the examiner introduces a new ground of rejection that is neither necessitated by [A]pplicant's amendment of the claims** nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p)." M.P.E.P. § 706.07(a), pages 700-57 and 58 (bolding added for emphasis).

Applicants submit that a new ground of rejection for claims 121 and 122 was presented in the Final Office Action. In the Office Action dated April 23, 2002, the Examiner rejected claims 121 and 122 under 35 U.S.C. § 103(a) as unpatentable over Lin. Notwithstanding this statement, the Examiner provided no discussion setting forth reasoning why claims 121 and 122 were unpatentable over Lin. In the Amendment filed July 23, 2002, Applicants did not amend claims 121 and 122. Subsequently, in the Final Office, the Examiner again rejected claims 121 and 122 under 35 U.S.C. § 103(a) as unpatentable over Lin, and included a discussion of the subject matter of claim 121 and 122 (Office Action, p. 6). In this discussion, the Examiner refers to the reference Hsu, but does not mention Lin (see above for full discussion of rejection). Therefore, Applicants submit that the Examiner presented a new ground of rejection not necessitated by an Amendment. Hence, Applicants request that the Examiner withdraw the finality of the last Office Action.

Additionally, it is respectfully submitted that the entering of the Amendment would allow the Applicants to reply to the final rejections and place the application in condition for allowance. Moreover, Applicants submit that the entry of the amendment would

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.


Attached hereto is a marked-up version of the changes made to the claims by this Amendment. The attachment is captioned "**Appendix to Amendment After Final of February 25, 2003**".

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: February 25, 2003

By: 
Bryan S. Latham
Reg. No. 49,085

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

/

Appendix to Amendment After Final of February 25, 2003

IN THE CLAIMS:

Please amend claims 83, 88, 92, 96, 101, 103, and 121 as follows:

83. (Three Times Amended) An electrostatic discharge protection device,
comprising:

a substrate;

a first diffusion region formed in the substrate;

a second diffusion region formed in the substrate adjacent to and spaced from
the first diffusion region;

at least one contact for making a conductive connection to the first diffusion
region;

a channel formed in a third region between the first and second diffusion regions;

and

a plurality of current divider segments [unevenly and] randomly distributed within
the first diffusion region.

88. (Twice Amended) The device of claim 83, wherein

the plurality of segments includes a first row of segments;

each one of the first row of segments has a center-of-area, the respective
centers-of-area [being one of aligned or] are not aligned in a straight line.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

92. (Twice Amended) An electrostatic discharge protection device, comprising:
a substrate;
a first diffusion region formed in the substrate;
a second diffusion region formed in the substrate adjacent to and spaced from
the first diffusion region;
contacts for making a conductive connection to the first diffusion region;
a channel formed in a third region between the first and second diffusion regions;
and
a plurality of current divider segments formed within the first diffusion region and
being [unevenly and] randomly distributed therein,
wherein at least one of the plurality of current divider segments is completely
surrounded by the first diffusion region.

96. (Amended) [The device of claim 83, wherein said segments include] An
electrostatic discharge protection device, comprising:
a substrate;
a first diffusion region formed in the substrate;
a second diffusion region formed in the substrate adjacent to and spaced from
the first diffusion region;
a contact for making a conductive connection to the first diffusion region;
a channel formed in a third region between the first and second diffusion regions;

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

a plurality of current divider segments formed within and completely surrounded by the first diffusion region including first and second segments formed in at least one of different shapes, different sizes, and different orientations with respect to each other.

101. (Amended) [The device of claim 83,] An electrostatic discharge protection device, comprising:

a substrate;

a first diffusion region formed in the substrate;

a second diffusion region formed in the substrate adjacent to and spaced apart from the first diffusion region;

a contact for making a conductive connection to the first diffusion region;

a channel formed in a third region between the first and second diffusion regions;

and

a plurality of current divider segments formed within and completely surrounded by the first diffusion region,

wherein said segments include a first segment spaced apart by a first gap in a first direction from an adjacent second segment;

said segments further include a third segment spaced apart by a second gap in the first direction from an adjacent fourth segment; and

said first gap being larger than the second gap.

103. (Amended) [The device of claim 83,] An electrostatic discharge protection device, comprising:

a substrate;

a first diffusion region formed in the substrate;

a second diffusion region formed in the substrate adjacent to and spaced apart from the first diffusion region;

a contact for making a conductive connection to the first diffusion region;

a channel formed in a third region between the first and second diffusion regions;

and

a plurality of current divider segments formed within and completely surrounded by the first diffusion region,

wherein said segments include a first segment having a first center-of-area being spaced apart from an adjacent second segment having a second center-of-area;

a third segment having a third center-of-area being spaced apart from an adjacent fourth segment having a fourth center-of-area; [wherein]

a first distance in a first direction between the first and second centers-of-area;

a second distance in the first direction between the third and fourth centers-of-area; and

the first distance being larger than the second distance.

121. (Amended) An electrostatic discharge protection device, comprising:

a substrate;

a first diffusion region formed in the substrate;

a second diffusion region formed in the substrate adjacent to and spaced from the first diffusion region;

a contact region for making a conductive connection to the first diffusion region;
a channel formed in a third region between the first and second diffusion regions;
and
a plurality of current divider segments formed within the first diffusion region
between said [at least one] contact region and the channel and each of the [segments]
current divider segments formed within the first diffusion region being closer to the
channel than to the contact region.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com